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VOLUME TWO

JANUARY, 1893.

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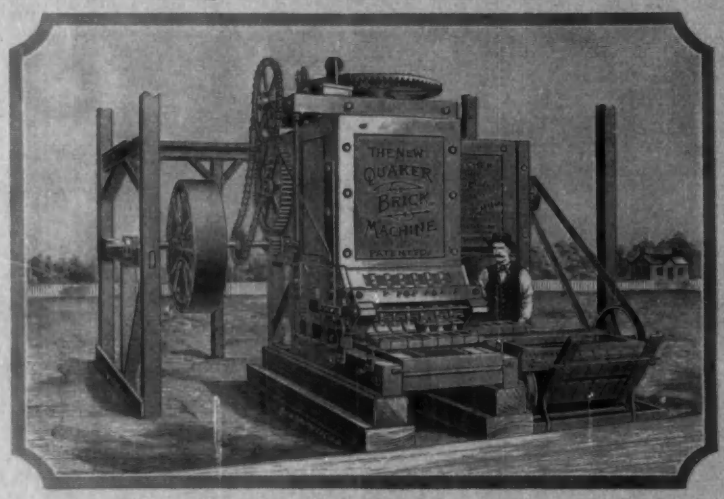

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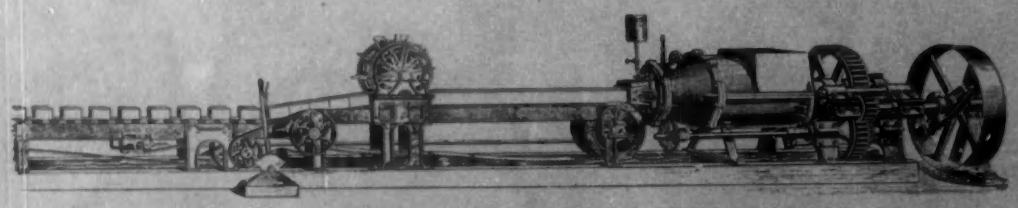

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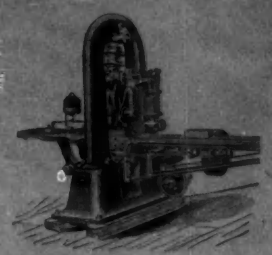

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THE BRICKBUILDER

VOL. II. BOSTON, JANUARY, 1893. No. 1.

ARCHITECTURAL TERRA-COTTA.

I PROPOSE to divide my subject under the following heads, namely, the origin of terra-cotta, its durability, the material of which it is made, the processes of its manufacture, and the mode of its application, and to say a few words on each of these points as far as a limited space will permit.

THE ORIGIN OF TERRA-COTTA.

In searching for the origin of terra-cotta we must let our thoughts go back to the most remote periods of which we have any historical record, and in these ancient times we find a material answering in substance to the terra-cotta of to-day, being largely used for the purpose of building. It is said "that the children of Seth, the son of Adam, built two pillars, one of brick and one of stone, and they inscribed upon each of them the discoveries they had made concerning the heavenly bodies, so that their inventions might be preserved to mankind, and not be lost before they became sufficiently known." This is the earliest record we have of any kind of building material; we are told previously of their building cities, but no record is made of the material used. I think from this single record we may reasonably infer that brick was a general building material in those ancient antediluvian days. I am aware that the term "brick," as technically applied and understood in our days, is restricted to blocks of burnt clay of a limited size, not exceeding such as may be easily taken up and laid in the building with one hand, whilst the other is left free for the use of the trowel, and that the term "terra-cotta" applies only to blocks of a larger size, into which only the best selected clays are convertible. But in this pillar of brick I think we may discern the employment of both small and large blocks; and that the term "terra-cotta" being then unknown, the whole is spoken of as brick. Whatever small blocks there may have been used, it is only reasonable to suppose that larger ones in the shape of tablets would be required, on which to model or inscribe the representations of the heavenly bodies, illustrative of the manner of their revolutions as then believed in, or ascertained.

Then coming to the days immediately following the deluge, we read that the families of the sons of Noah, as they journeyed eastward, found a plain in the land of Shinar and dwelt there, and they said one to another, "Go to, let us make bricks and burn them thoroughly, and they had brick for stone." I think that from the mention of brick in these particular instances we may reasonably conclude that brick also entered very largely into the other building operations of the time, and that the cities built in those periods, such as Nod and Enoch before, and Babylon, Sidon, and Nineveh after, the flood, were in great part built with that material. We have corroborative evidence in support of this supposition in the masses of brickwork, and many fragments of ceramic ornamentation which have been unearthed and brought to light by the researches that have been made in what are supposed to be the remains of those ancient cities. Of course it is impossible to determine with any degree of certainty as to what part of these remains, if any, belong to that very early period of which we have been speaking, but they are certainly the most ancient that have yet been discovered. Enough, therefore, I think has been said to show that the manufacture of terra-cotta is no new invention, but one of the earliest, if not the very earliest, which history has recorded, or antiquarian research has revealed.

Coming down to more modern times, the technical term "terra-cotta," being in itself Italian, at once points to the source from whence its present extensive and extending use as an architectural or building material is derived. It was, no doubt, in the first instance, applied by the Italians more to the purposes of ornamentation than construction, and this very probably because from its plasticity they could easily treat it and bring it into any artistic form they might desire.

Its present use in this country as a constructive material seems to have arisen from a felt want of some good, reliable building material that would retain its color, and successfully resist the decaying influence of the atmospheric gases, especially in large towns and cities; the best and most carefully selected stone having been found to fail in these respects.

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ITS DURABILITY.

I think that the principal value of terra-cotta lies in its durability, and that its continued use as a building material greatly depends upon this. Whether it will fulfil this condition is, as yet, a matter of experiment. It is now on its trial, and time alone will disclose it. Its introduction into this country being of so recent a date, it may be thought premature to make any positive assertion; but I think we may safely say, without fear of contradiction, that from the observations we have been able to make during the few years it has been in use, and from the chemical experiments that have been made upon it, there is every reason to believe that it will answer the purpose admirably. In the first place, terra-cotta being impervious to wet, or nearly so, it will not vegetate as stone is liable to do; and the small particles of dust, soot, etc., which settle down upon it, and which in the case of stone so soon disfigure it, changing it from white to black, are, upon every shower of rain that falls, washed away, leaving the color just as at first. And secondly, that most destructive influence of all with which stone has to contend, — the quick succession of moisture and frost, which so rapidly demolishes a stone building, crumbling away its copings, projections, and mouldings, — this decaying influence has little or no power upon terra-cotta. Of course, it will be understood that the foregoing remarks are intended to apply only to well-burnt terra-cotta, made from a suitable clay. There is bad terra-cotta as well as bad stone, and I think that of the two the bad stone is the preferable. Nothing can be more objectionable than terra-cotta made of unsuitable clays that will not stand the maximum of heat, or made of good clay, but only partly or imperfectly burnt. The object that is aimed at, and which I think has led to the adoption of terra-cotta — its durability — is defeated by this inferior class of goods. The making of it cannot be too severely censured, or its use too roughly discarded. In these days of sharp competition, when we are too apt to look more to the cost than the quality of an article, there is great danger of this rubbish in the shape of half-burnt clay getting into the market, much to the detriment and permanent injury of the genuine and reliable material. I think that architects have the remedy of this in a great measure in their own hands, by looking well to the quality of the material they recommend. A perishable material is dear at any price. Although it may cost slightly more to obtain a durable one, it is by far the cheapest in the end. Sometimes the durability of terra-cotta is materially affected by the manufacturers endeavoring to meet the expressed wish of the architect that it should be of a certain tint or color which is unnatural to it when treated in a legitimate way. A little lighter or a little darker may seem an easy thing to attain, but many times it means the sacrificing of durability in order to satisfy a questionable taste or fancy. To obtain the desired color the material has to be heated artificially; it must be either under- or over-burnt; or there must be an admixture of other, and often inferior, clays with the genuine, and thereby the whole substance is deteriorated. If terra-cotta is to stand its ground, and prove itself a durable first-class building material, I think it would be well for the manufacturers themselves to be honest, and to exhibit plainly what their own particular clays will produce of a reliable character, without any injurious admixture or composition, and not be easily induced to deviate from it. To take a good material as a base on which to heap as much of an inferior kind as it is able to bear, or as much as is compatible with its salability, will, in the end, prove most suicidal to the manufacturer's interest.

THE MATERIAL OF WHICH IT IS MADE.

The material, as you are well aware, is clay. It is, then, concerning the composition and manipulation of the clays that I have to speak, and more especially to point out those that I consider the most suitable for the manufacture of terra-cotta. In this I think it very probable that we differ from the most ancient practitioners. We cannot suppose that the ancients would, in the first instance, delve into the bowels of the earth in order to ascertain if other and better clays could be found for their purpose. They would, in all likelihood, make use of that which came the readiest to their hand. In this case, they would naturally begin with the surface clays of the alluvial plains, which were easily obtained, and, because of their native plasticity, easily heated and moulded, or fashioned into form by the best methods they then could invent.

The clays of which the best terra-cotta of to-day is manufactured, as a rule, with few exceptions, have to be raised from a distance below the surface of the earth. This is generally done by means of sinking shafts and mining for it in the same way as for coal, or if by open work, a large amount of superincumbent earth has to be removed in order to obtain it. A hard, compressed substance of clay is by this means obtained, which, if free from foreign organic matter, and possessing the proper stamina of a genuine clay, is the most serviceable that can be obtained for this work.

However desirable it may be to make use of the surface clays of the country for the manufacture of terra-cotta, because of the ease by which they may be obtained, and of their native plasticity, this is more than counterbalanced by the absence of strength and durability in the material they produce, and by its liability to crack, twist, and go out of shape in the manufacture. Whatever scientific knowledge or experiment has discovered, or may discover, of the nature of its deficiencies, I think it is impossible at a reasonable and remunerative cost to infuse into this surface clay that which will enable it to take rank with such raw material as naturally possesses in itself the qualities which we look for; and it is very doubtful whether this can be effected at any cost whatsoever.

The chief substances of which all clays are composed are scientifically called alumina and silica; but these substances very much vary in their proportions, and as they

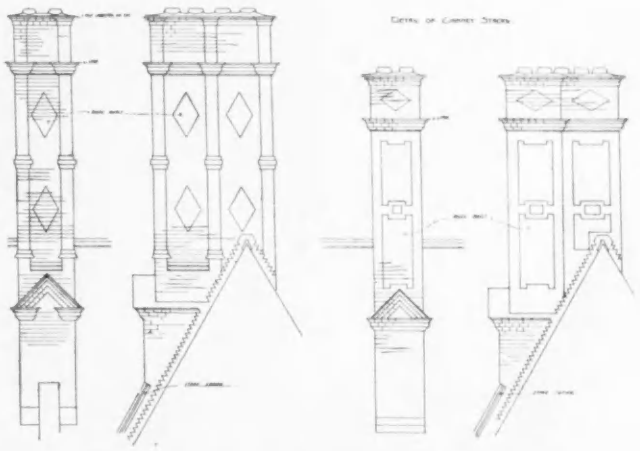
vary, so the strength and durability of the material they produce are increased or diminished. Alumina is an earth that may also be called a metallic base. It cannot be dissolved in water, but it has a close affinity for it, and when combined with water it yields a tenacious and plastic paste. Silica differs from alumina in not being a base: it is rather of the nature of an acid, for it will combine with the base of the alkalies, forming a class of salt-like substances called silicates. Silica is therefore able to combine with the base alumina, and produces silicate of alumina, which is really the constituent of the clay, rather than alumina alone. The presence of silica in very small proportions, as in the clayey top soils of the fields, seems only to prevent the extreme closeness of the clay; but in large proportions under the action of heat is a cementing or consolidating substance. It is therefore on the proportion of silica which the clay contains that the strength and durability of the material depend, and in the manufacture of terra-cotta it is above all things desirable that the clay should possess its adequate proportion of silica. The natural clays that are most favorable to the production of the best terra-cotta are those which contain from sixty to seventy per cent of silica, twenty to thirty per cent of alumina, and a small proportion of foreign materials, chiefly ferruginous oxide. These clays are to be found in abundance in many parts of the country, and only require the necessary labor and expense of excavating or mining in order to obtain them. In some few instances the surface plastic clay of the vale comes near to the required standard; in others, certain strata in the deep banks or beds of red marl approach it; but the best and most plentiful supply is in the anhydrous strata of the coal measures, varying in thickness up to about five feet. Of course the whole substance of these clays is not suited to the manufacture of terra-cotta; but with a judicious selection and amalgamation, the best and most reliable material is produced.

I think that I shall not be charged with undue partiality when I say that one of the most suitable beds of this clay available at this time is that which underlies the coal-measures at Glascote, in the neighborhood of Tamworth, and which is now at the service and use of Messrs. Gibbs & Canning. The superiority of this clay is manifest in the works they have already produced from it, to particularize which I would name the Natural History Musuem, South Kensington. There are many other buildings to which I might confidently refer; but this one alone is enough to convince the most casual as well as the most searching observer, that the clays of which I am now speaking are an invaluable material for the production of terra-cotta.

There is also one metallic oxide, that of iron, which enters more or less into the composition of all genuine clays in some form or other, and pretty largely into some. This has little or no effect upon the strength or durability of the material, but only acts as a coloring agent. Its presence in large or small quantities makes the difference in the color, varying from a slightly tinged buff to a dark red. The action of the heat upon it brightens up or brings out the color, and the greater the heat that can be brought to bear upon it without damage to the material the darker the color becomes. Yet it is impossible for any scientific research or analysis to decide with any degree of accuracy what shade of color any clay will produce.

They may be able to ascertain the quantity of the oxide it contains, but these are so varying in their results that experiment alone can decide the tint it will burn. Of course it will be understood that I am now speaking of the colors which are natural to the clays, and not of any artificial ones that may be produced; this properly belongs to the manufacturing process. But I may here say, while speaking on the question of color, that the color properties of any clay may be increased or diminished by the addition or extraction of the oxides, and that other colors not natural to the clay may be produced by the aid of chemical ingredients, such as cobalt for instance, which produces a dark blue gray; but it is doubtful whether the additional cost of all such productions will not exclude them from forming part in any extensive building operations.

(To be continued.)



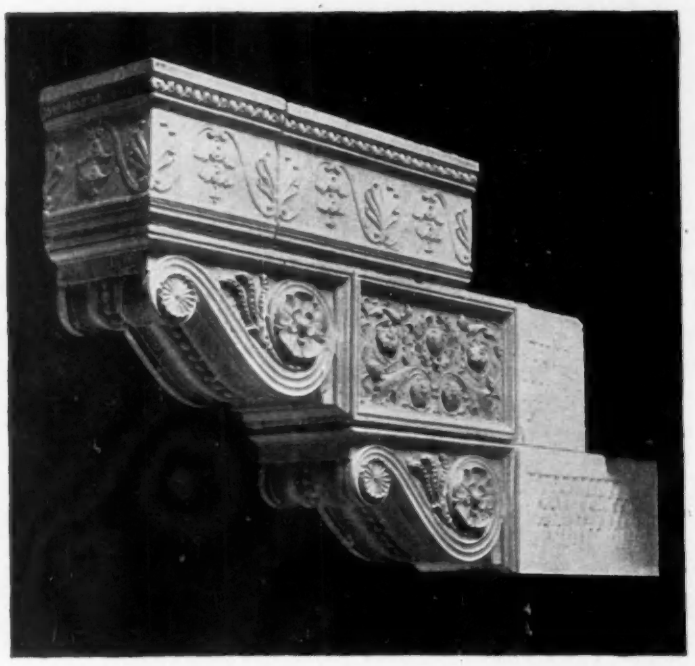
CHIMNEYS OF BUILDINGS ON MOUNT STREET.
ERNEST GEORGE & PETO, ARCHITECTS, LONDON.

A very neat souvenir programme of the seventh annual convention of the National Brick Manufacturers Association, to be held at Louisville, Jan. 24 to 28, has been issued by J. W. Penfield & Son, brick machine manufacturers, of Willoughby, Ohio.

In building brick houses in positions where they are not protected by surrounding property, do not forget that hollow walls will add greatly to the convenience of the occupiers. They will render the house cooler in summer and warmer in the winter, and will assist in materially keeping the house dry. The cost of hollow walls is only very little higher than that of walls built solid. — *Canadian Architect.*

A FAIENCE BRACKET.

The photograph on this page is from one of the faience brackets supporting a desk in the Worcester Five Cents Savings Bank, recently designed by Messrs. Earle & Fisher. This desk, together with much of the other interior work, was executed by Messrs. Atwood & Grueby, of Boston. The peculiar light in which it is placed makes it impossible to secure a photograph of the desk for publication, but we hope to publish a drawing of it by Mr. J. A. Schweinfurth in our next number.



FAIENCE BRACKET.
For Desk in Worcester Five Cents Savings Bank. Earle & Fisher, Architects. Atwood & Grueby, Makers.

In an old number of the *Building News* a correspondent, in the department of "Intercommunication" inquires regarding cleaning up old brickwork. Two numbers later, in the same department, appears this answer, to which we fully subscribe (the Italics are ours): —

"The only decent way to treat old brickwork is to pull it down, if you can't leave it alone. Of other ways, the least indecent I know of is to rough-cast it. As for geting it up 'equal to new,' *where do you expect to go when you die if you do such things as that?*'"

NOTE ON THE COMPRESSIVE RESISTANCE OF BRICK.

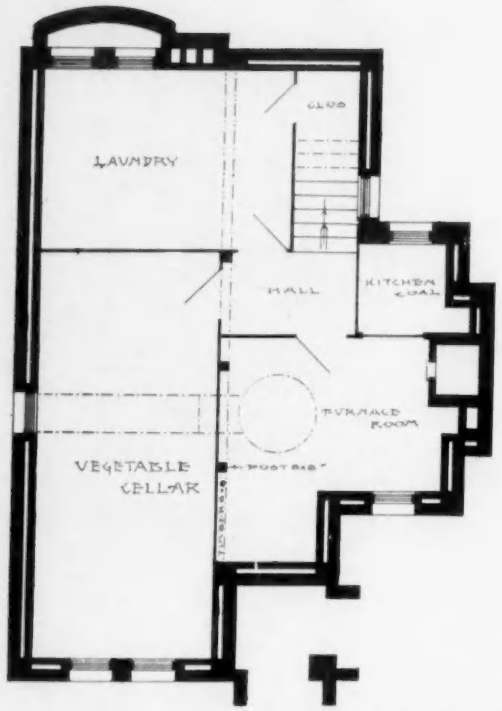
THE writer has previously called attention to the fact that the flatness of the pressed surfaces greatly affect the crushing strength of cubes of brick or stone. The present note is written to present the results of some experiments made to determine the effects of different methods of preparing the pressed surfaces to the test specimens.

In testing some paving brick, the writer made some preliminary experiments by preparing the surfaces in five ways, viz.: 1, grinding as nearly flat as possible upon the convex side of an emery stone, and crushing between self-adjusting parallel cast-iron plates; 2, removing the irregularities of the surface, and crushing between blotting paper; 3, removing the irregularities of the surface, and crushing between straw boards; 4, removing the irregularities of the surface, coating with plaster of paris and placing under slight pressure until set (12 to 24 hours), and then crushing; 5, coating with plaster of paris which was afterwards ground down on a sand-paper disk, to the surface of the brick, so as to leave a minimum thickness with a perfectly flat surface, and then crushing.

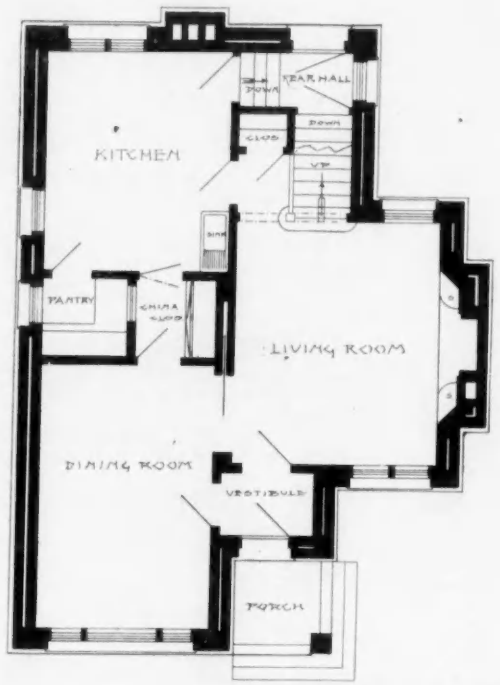
After a considerable number of experiments, it was decided that there was no great difference between the first three methods, while the difficulties in applying the last two were so great as to render them worthless. With a grade of brick which was quite uniform in quality, the first three methods gave 7,000 to 9,000 pounds per square inch as the crushing strength of cubes. The fairly close agreement of the results was considered satisfactory evidence that the method employed secured the full strength of the brick. Subsequently the writer decided to determine the strength of cubes when pressed surfaces were prepared with the greatest care. The samples were prepared on a rubbing bed at a marble dressing establishment, by the ordinary workmen, with instructions to secure perfectly flat surfaces. The brick were of the same grade as those referred to above, and many of the samples were the second halves of the brick used in the first experiments. The strength of the carefully prepared cubes ranged from 16,000 to 21,000 pounds per square inch, and averaged a trifle over 18,000.

The conclusion derived from the two series of experiments is that an almost imperceptible difference in the flatness of the test specimens makes a very great difference in the strength. Obviously this difference is greater the harder and more brittle the brick or stone. It is perhaps well to repeat that tests of compressive resistance of blocks of stone or brick are useful only in comparing different samples, and gives no idea of the strength of masonry constructed of these materials.

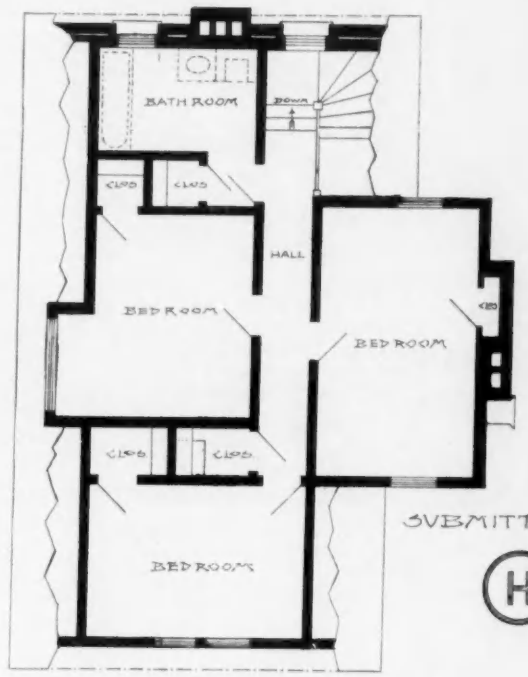
It is interesting to note that Rankine and Trautwine, standard British and American authorities, in editions of their engineers' manual, published a few years ago, give the crushing strength of the best brick at 1,100 and 4,000 pounds per square inch respectively, while there has recently been tested in the university testing laboratory three lots of brick which averaged from 15,000 to 18,500 per square inch. The difference is probably due mainly to improvements in the manufacture of brick. The crushing strength of granite, when tested under similar conditions, is from 12,000 to 20,000.—*Ira O. Baker, Professor of Civil Engineering, University of Illinois, in the Technography.*



-BASEMENT-PLAN-



-FIRST-FLOOR-PLAN-
-SCALE 3/16 TO 1'-



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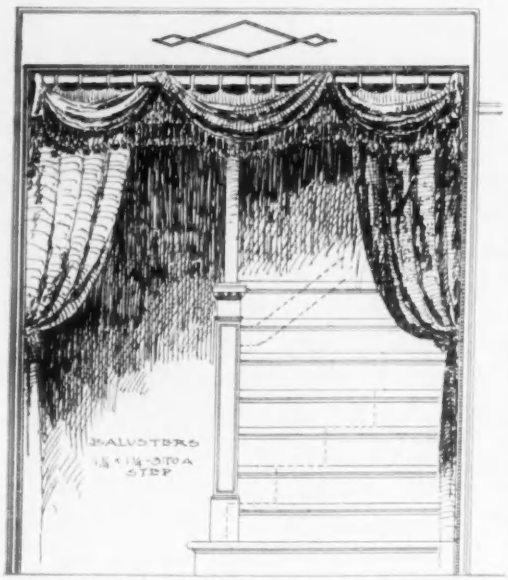
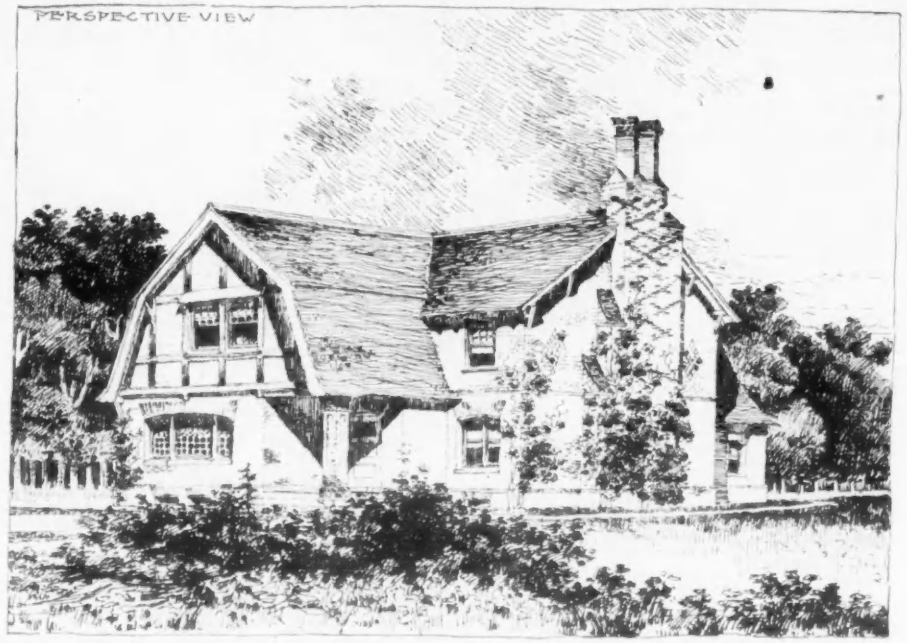
SECOND-FLOOR-PLAN-

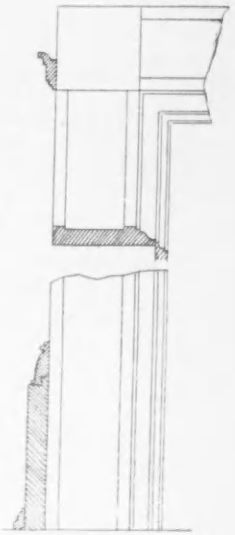


-FRONT-VIEW OF STAIR-
SCALE 3/4 TO 1'

PERSPECTIVE VIEW



-LOT-PLAN-
-SCALE 1/32 INCH-



-CASING & BASE-
-SCALE 3" TO 1'-

BRICKBUILDER COMPETITION. FOR A $2,000 BRICK HOUSE.

DESIGN BY JULIUS E. HEIMERL, MILWAUKEE, WIS.

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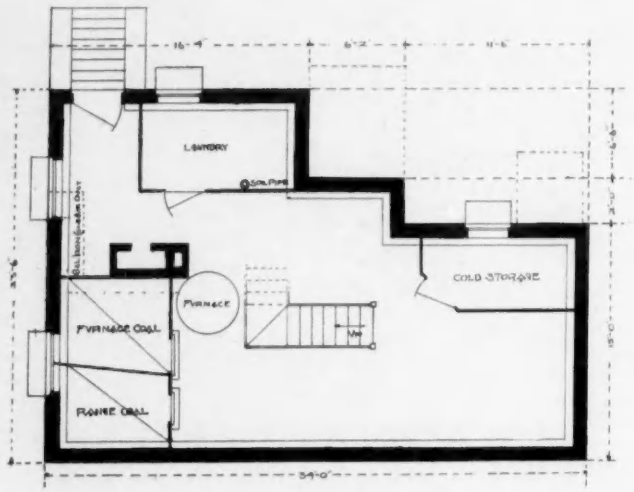
BRICKBUILDER COMPETITION FOR A $2,000 BRICK HOUSE.

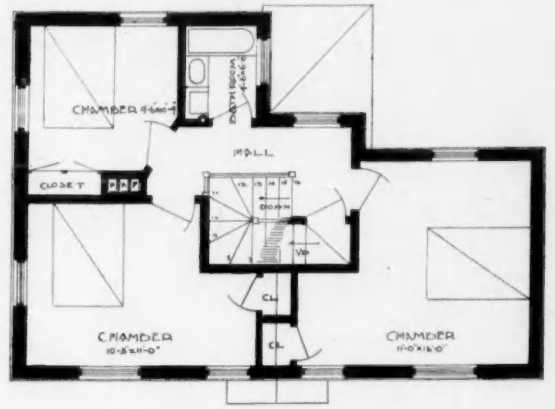
DESIGN BY JULIUS F. HEIMERL, MILWAUKEE, WIS.

DESIGN BY JULIUS F. HEIMERL, MILWAUKEE, WIS.



BASEMENT PLAN

FIRST FLOOR PLAN



SECOND FLOOR PLAN

"BRICKBUILDER" COMPETITION FOR A 2000 DOLLAR BRICK HOUSE

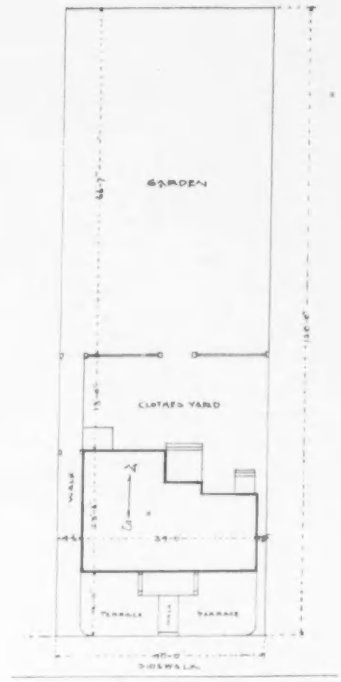
SUBMITTED BY "N Y PAS"

SCALE — 1 2 3 4 5 6 7 8 9 10 FEET

NORTH [REAR] ELEVATION

SOUTH [FRONT] ELEVATION

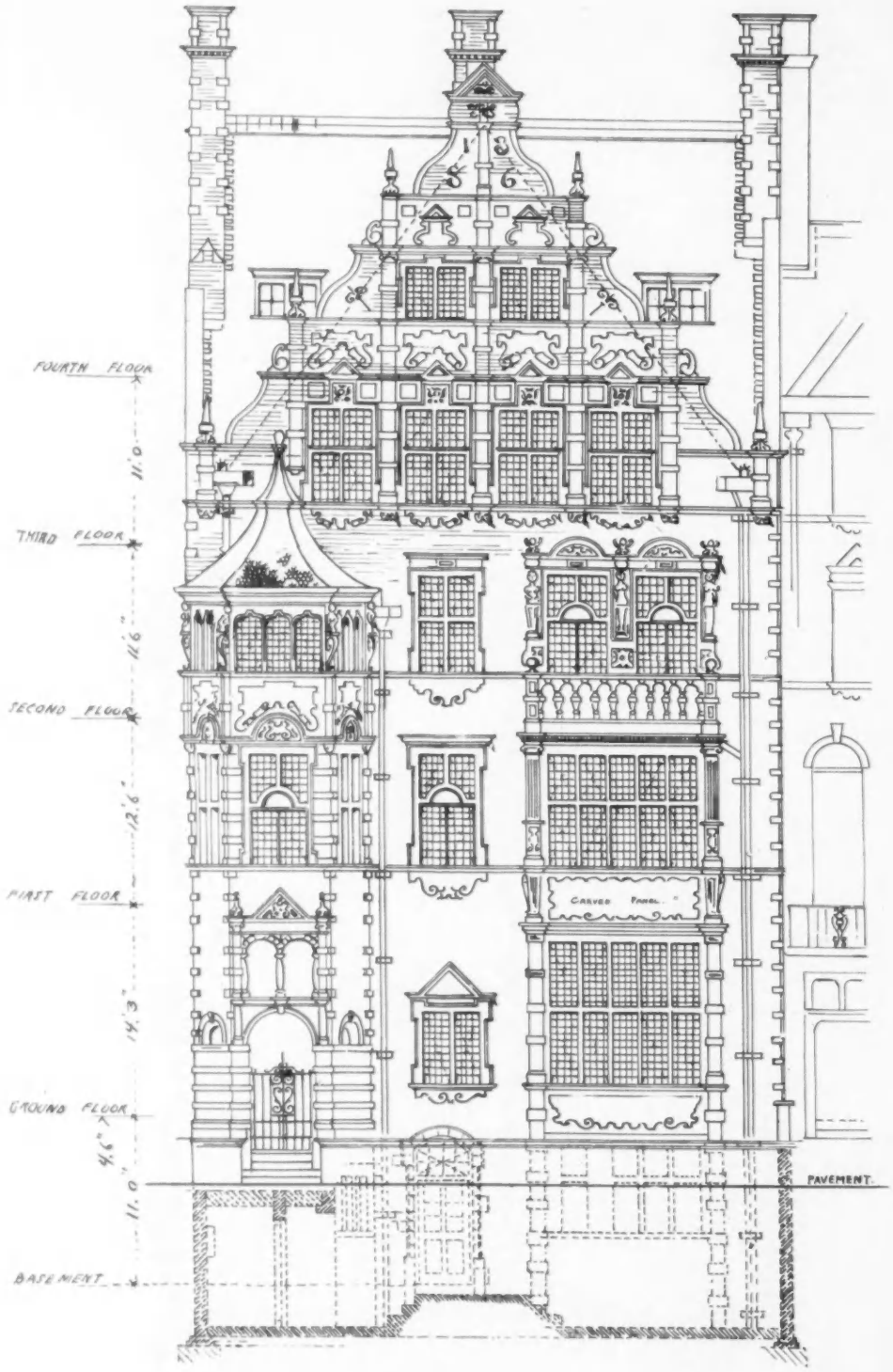
SECTION



BLOCK PLAN — SCALE — 0 1 2 3 4 5 6 7 8 9 10 FEET

BRICKBUILDER COMPETITION FOR A $2,000 BRICK HOUSE.

DESIGN BY W. T. S. HOYT, BOSTON, MASS.

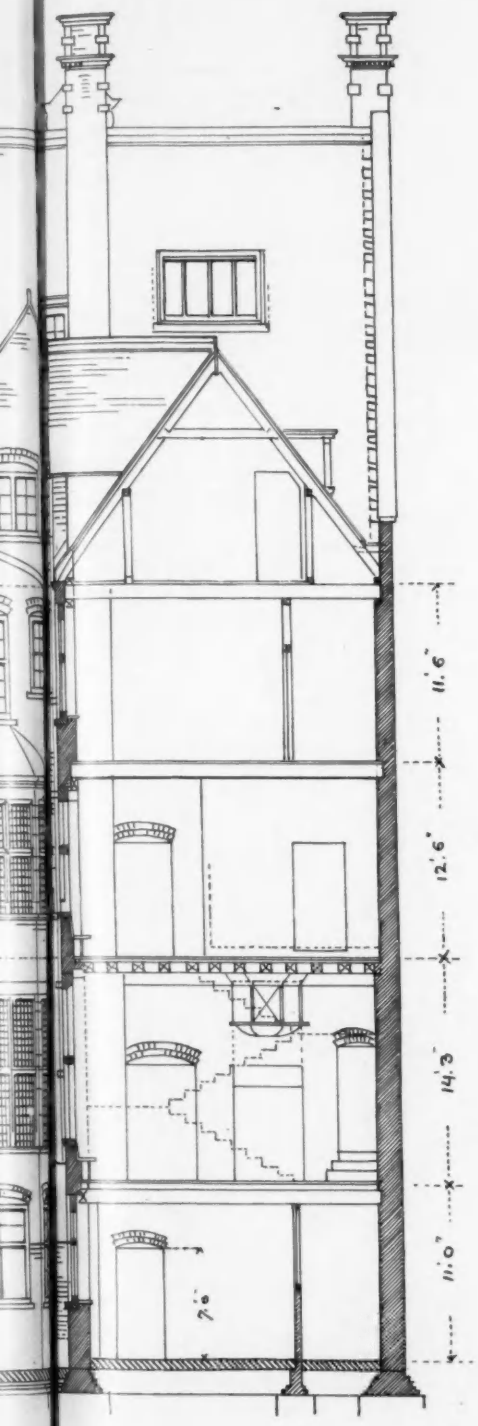


FRONT ELEVATION.

SECT &

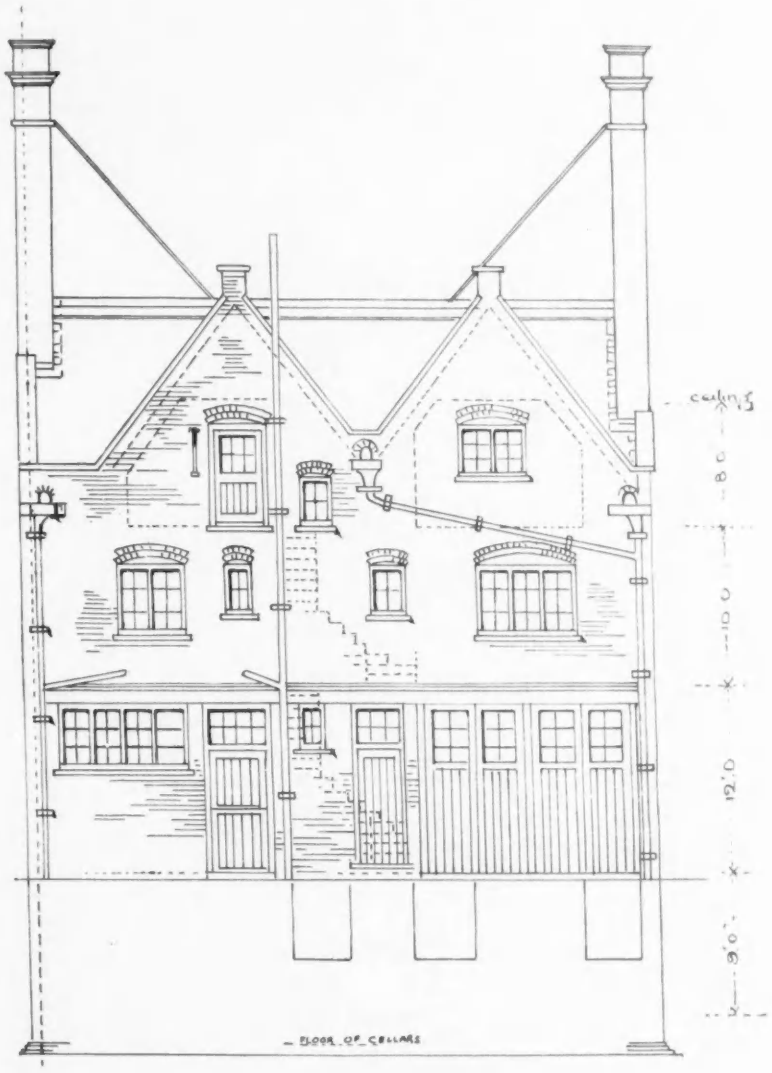
RESIDENCE IN CADOGAN SQE, L

ERNEST GEORGE & CHITE



SECT & ELEVATION

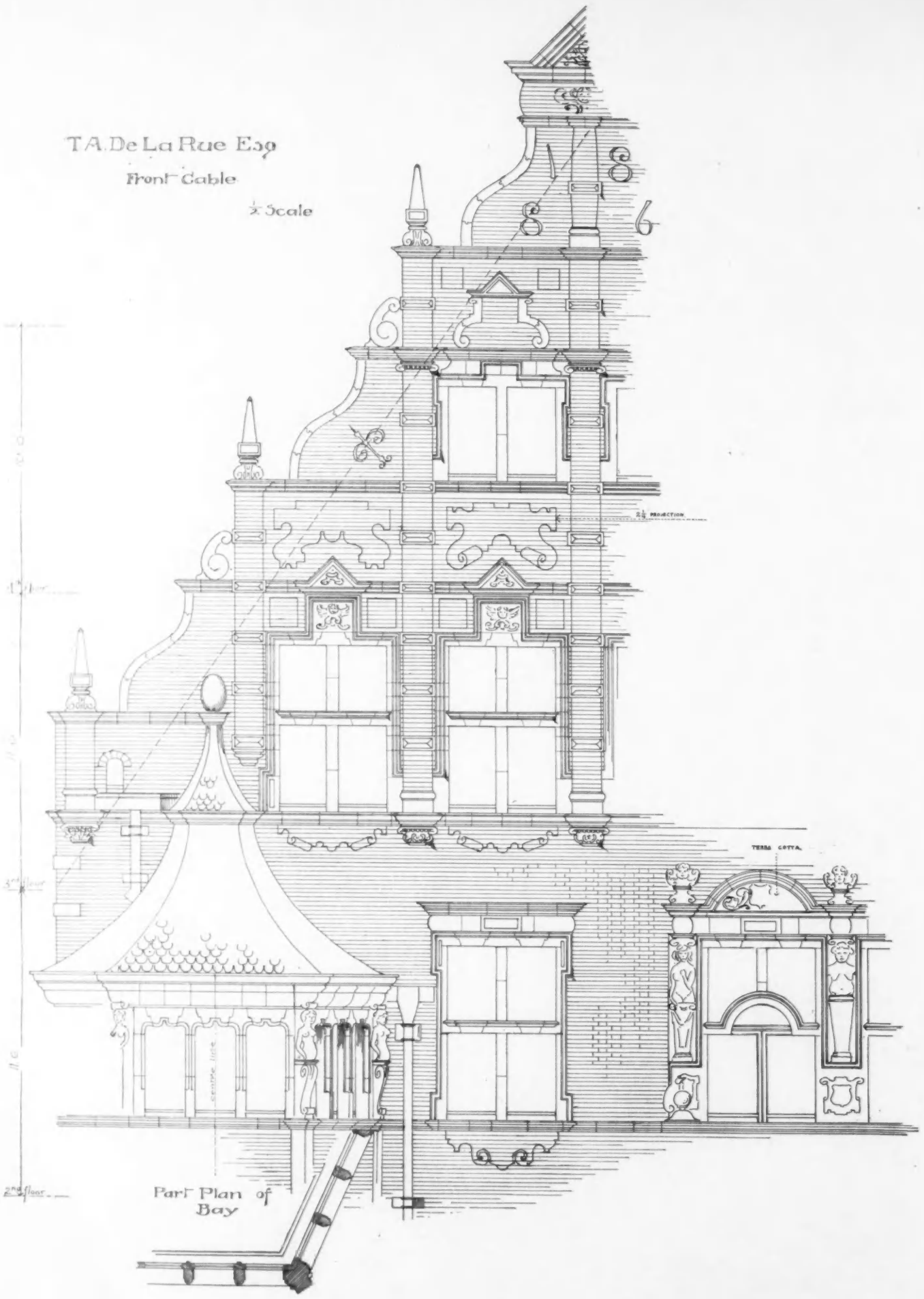
T. A. DE LA RUE ESQ.
CADOGAN SQUARE.



BACK ELEVATION OF STABLE

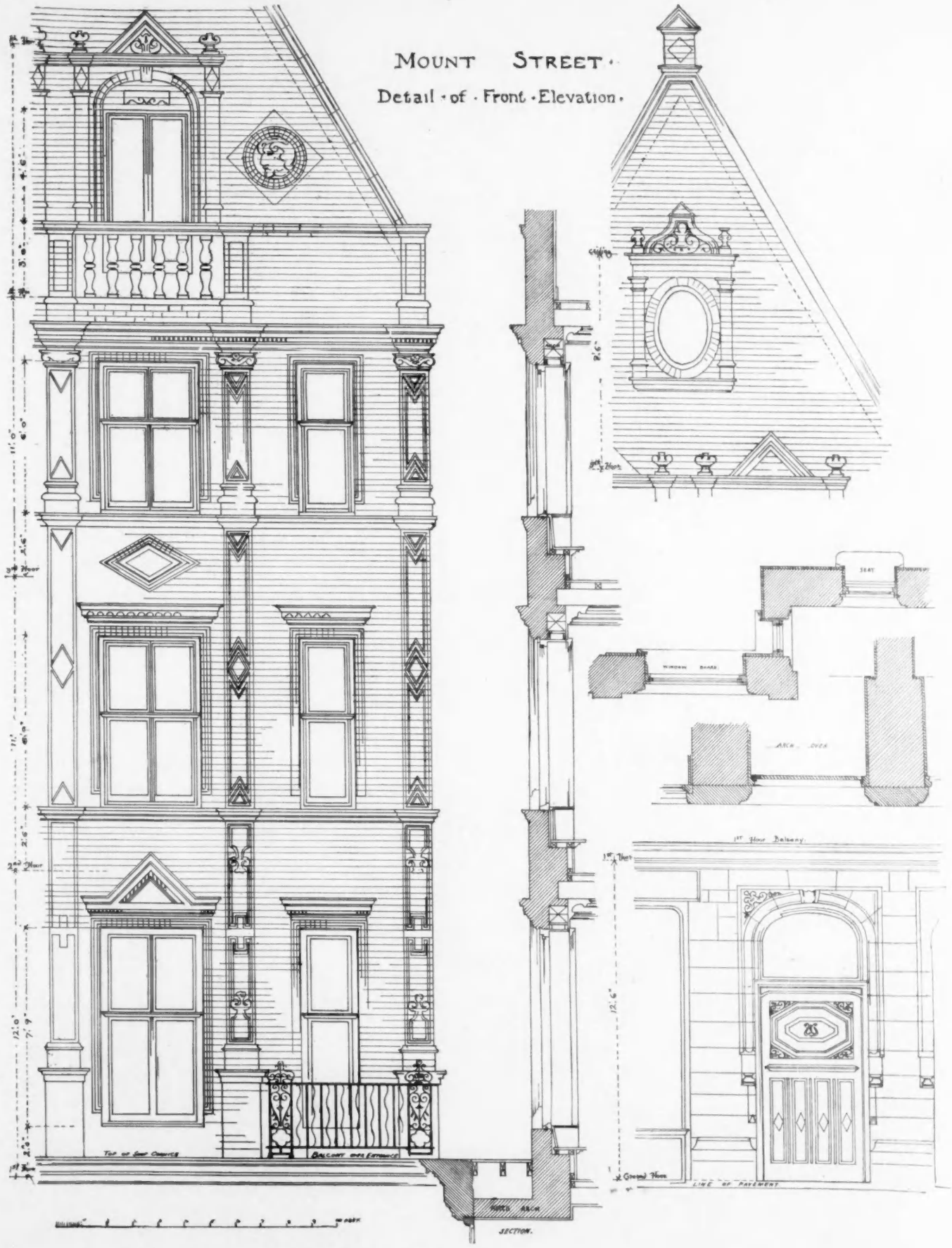
N SQE, LONDON. For details see Plate 6.

RGE & ARCHITECTS, LONDON, ENG.



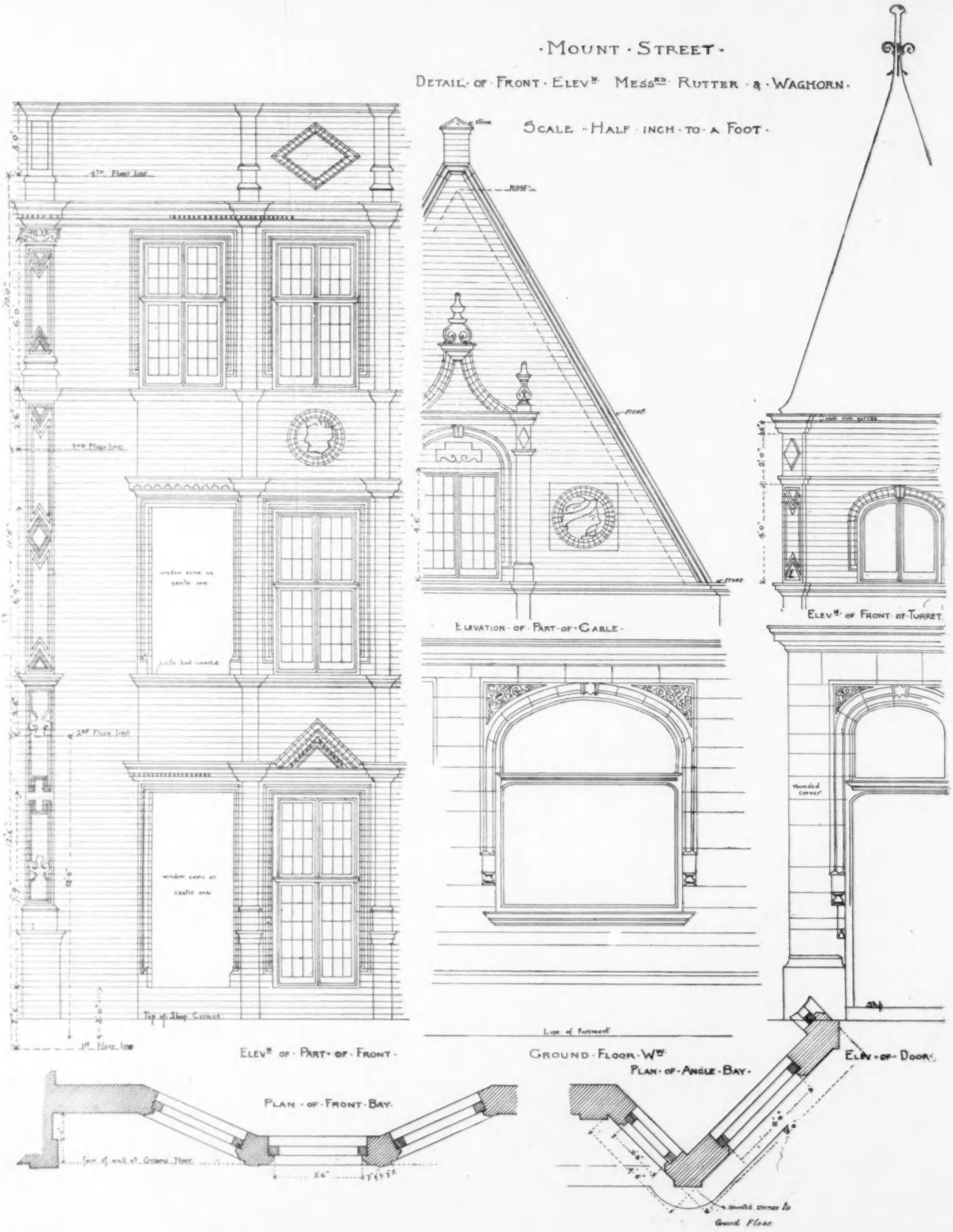
DETAIL OF RESIDENCE, CADOGAN SQUARE, LONDON. See Plates 4 and 5.

ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.



DETAILS OF ENGLISH BRICKWORK.

ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.


·MOUNT · STREET·
DETAIL· OF · FRONT · ELEV^N MESS^RS RUTTER · & · WAGHORN·
SCALE · HALF · INCH · TO · A FOOT ·
ELEVATION · OF · PART · OF · GABLE ·
ELEV^N OF FRONT OF TURRET
ELEV^N OF · PART · OF · FRONT ·
PLAN · OF · FRONT · BAY·
GROUND · FLOOR · W^S
PLAN · OF · ANGLE · BAY ·
ELEV · OF · DOOR ·

DETAILS OF ENGLISH BRICKWORK.

ERNEST GEORGE & PETO, ARCHITECTS, LONDON, ENG.

THE BRICKBUILDER.

AN ILLUSTRATED MONTHLY DEVOTED TO THE ADVANCEMENT OF BRICK AND TERRA-COTTA ARCHITECTURE.

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THE BRICKBUILDER is for sale by all Newsdealers in the United States and Canada. Trade supplied by the American News Co. and its branches.

IN looking back upon the year just closed THE BRICKBUILDER takes satisfaction in noting that many of the reforms in brickbuilding which it has urged, and labored as far as lay in its power to help forward, have made a distinct advance. It can hardly be denied that more improvement has been made in this year than in any single previous year, and we feel confident that the forward movement will continue with accelerated speed. Many causes have conduced to this end. In the first place, many of our foremost architects who had hitherto given but slight attention to brickwork, have devoted especial study to it, and many who had often given evidence of their knowledge of what a good brick design requires, have given more attention to it than ever before. Brickmaking also has advanced, and architects have become more familiar with what the best brickmakers are accomplishing. The new building laws in several cities have emphasized afresh the importance of brick in its fire-resisting qualities, and have thus helped to increase the recognition of it as one of the noblest of building materials. This has led owners to be more willing to use it in place of stone, a willingness which has at once given the architects the opportunity to show what can be done in brick, and which has also been increased by the excellent use which in so many cases has been made of these opportunities. The improvement is, of course, for the most part, due to those architects who have given more attention to brickwork and urged its merits upon their clients and their fellow architects, and there are among the younger men especially a number who have shown themselves capable of a much more interesting and much more appropriate treatment of brick than it has ever received in this country until very recently. THE BRICKBUILDER has endeavored to help on this movement by pointing out, and, when possible, by publishing, the more interesting of these new brick buildings, together with the best work being done abroad, and examples of the ancient brickwork of Europe from which our designers draw much of their inspiration. In this way, through its columns, designers interested in brickwork in different parts of the country are kept informed of what is being done by others, and thus may be encouraged and helped in their own work.

IT is noticeable that during the year the use of the better bonds — English bond and Flemish bond — has been more common in the best work, to say nothing of the lavish use that has been made in some instances of the more complicated bonds in ornamental work. We are, of course, a long way yet from any frequent use of English or Flemish bond in every course in purely constructional work: it might be said, indeed, that these bonds are never used except in façade walls. But if our brickwork is to become what it ought, the abominable "American" bond must be abandoned, or, at any rate, restricted in its use to the cheaper and commoner constructions, except in cases where it may be made of value decoratively where constructional considerations are not paramount. Such cases are, however, very exceptional; and the use of the bond ought to be regarded as a sign of cheap and generally poor work. In addition to the wonderful variety of expensive bricks of ornamental color, the past year has shown more appreciation of the beauty of variety of color in common brickwork also; and there have been several instances which have come under our notice in which common brick has been used with telling effect for the sake of its variety of color, just as the yellow brick, which takes its name from the Madison Square Garden, where it was first used, is especially esteemed for its beautiful variety of color, for there is other yellow brick of which one sees only too much. To see the relative effect of the two, we have but to compare the walls of the Madison Square Garden itself, or any building in which this brick has been used (for we are now speaking merely of the effect of the brick in producing an agreeable wall surface without regard to the design of the building in which it may happen to be used) — we have but to compare, we repeat, the exquisite beauty of the wall surface of the Madison Square Garden, in which every brick differs in color from its neighbors, with, for instance, the wall surface of the yellow brick walls of the addition to the State House of Boston, now in course of construction, where the absolute monotony of color of the brick ruins the effect of the building.

IN addition to the points we have already adverted to, we ought, perhaps, also to draw attention to the recognition of the joints of brickwork as a means of effect, and also of the textures of different bricks when contrasted with each other. Both these sources of effect have received much more attention during the past year than formerly, and brick diapers produced by different bonds and using brick of different colors have come much more into use. In

England and France in the modern as well as in the old work these sources of effect are well understood.

On the other hand, it is refreshing to note that the monstrous wall of carefully culled red pressed brick is coming more and more into well-deserved contempt, especially among the best architects. We suppose it will take a long time for New York, as well as for some Western cities, to wean itself from the use of the vermilion paint pot. But this too will come in time. It is curious to note that in architecture, as well as in politics, while many of the best reforms emanate from New York, some of the worst abuses seem to find their last refuge there.

THE better design of brick buildings which, as we have noted, is so marked at present, will require greater intelligence on the part of the contractors and of the brick masons. A beautiful design, to be carried out to best advantage, must receive some meed of appreciation from the men who are to put it into execution, and the best contractors and the best bricklayers will strive to familiarize themselves with the requirements of good brickwork, and of the methods of practical work which the best brick design demands. It should be more and more recognized that a closer sympathy and closer union of designer and workman, of architect and builder, are required by the best work. And we think the day is not far distant when the builder will receive as thorough a theoretical as well as practical training for his work, as it is now recognized the architect must have for his. From the workman, also, greater intelligence, greater knowledge, and greater interest will be demanded. The mere laying of a plain brick wall requires comparatively little intelligence, so that it has been notorious that bricklayers are not, as a class, as intelligent or as much interested in their work as the carpenters. The action of some of the unions, with their tendency to level everything down to the lowest, instead of raising up, has still further reduced the standard of intelligence among the bricklayers, as it has also reduced their ability for rapid and efficient work. But the requirements of the better brick design which is now coming into vogue, the use of brickwork as a means for obtaining the most elaborate architectural effects, absolutely necessitate greater skill, greater intelligence, and greater interest in his work on the part of the workman, and must soon bring to the front a class of men not inferior to the best carpenters in intelligence, skill, and sympathy with what is good in their work. The training of workmen is becoming daily a matter of more and more importance, and in this regard the trade schools and manual training schools, such as the Mechanic Arts High School in Boston, are doing an excellent and much-needed work.

AMONG the architects who have of late made excellent use of brick, none perhaps have produced — few indeed have had the opportunity of producing — such an interesting series of designs, interesting especially in the use of the simple forms of brickwork, as have come from the office of the city architect of Boston. It is to be hoped his work will have wide influence on the brickwork of the country. The *Architectural Review*, in its last issue, publishes several exceedingly interesting examples of Mr. Wheelwright's work; especially to be noted is the charmingly simple Engine House at Ashmont. The same number of the *Review* contains details and a full-page photo plate of the Century Club House in New York by McKim, Mead & White, which we have had occasion to refer to so frequently, and which is an excellent example of the use of terra-cotta with brick, and of the delicacy of effect to which light terra-cotta and yellow brick lend themselves.

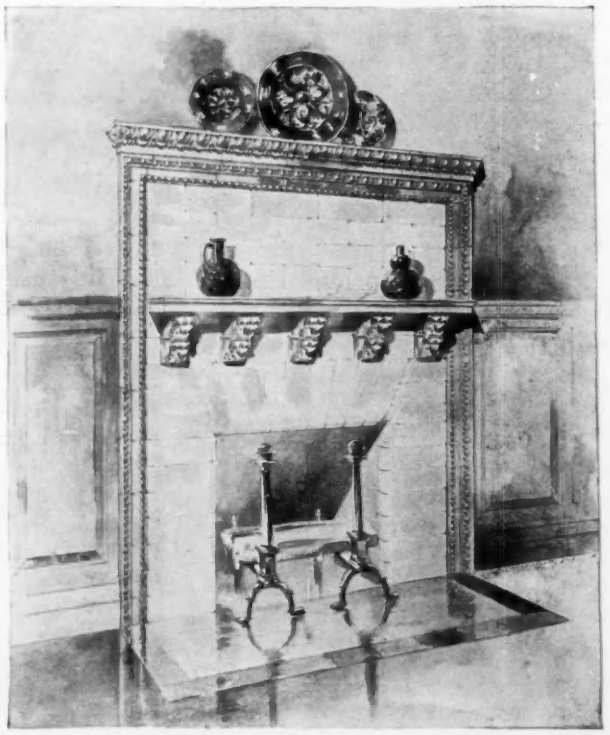
COMPETITIONS.

RULES: All drawings must be sent in marked with some motto or device and accompanied by a sealed envelope marked with the same, containing the full address of the competitor. The designs are judged by a committee of well-known architects, solely upon their merits, the names of the designers remaining unknown until the award is made, when the sealed envelopes corresponding to the devices on the designs are opened. To protect the interests of our advertising patrons it is stipulated that no ornamental bricks not found in their catalogues shall be used. This is really no restriction, for practically all of the leading manufacturers will be found represented in THE BRICKBUILDER. To encourage the study of effective use of the commoner materials, of two designs equally good, preference will be given that showing a skilful use of ordinary bricks to secure ornamental effect.

COMPETITION NO. 10.

A FAIENCE MANTEL.

Messrs. Atwood & Grueby, associated with Fiske, Homes & Co., of Boston, manufacturers of Faience ware for architectural decoration, desire to offer through the columns of THE BRICKBUILDER a competition for a Faience mantel, and to give an idea of what this work



is, we publish herewith a sketch by J. A. Schweinfurth, showing its character.

Faience is really terra-cotta, treated with enamels and glazes in any colors desired, so that any terra-cotta treatment is appropriate. The mantel illustrated above can be executed for about $60, and designers are requested to keep as near this cost as possible. Plan and front and side elevations at one half inch scale are required, and the designer may, if he desires, submit, in further explanation of his design, a perspective sketch in color or monochrome, at a smaller scale.

For the best four designs, Messrs. Atwood & Grueby will pay $10 each, and for the next four or less that are considered worthy a prize, THE BRICKBUILDER will award $5 each. Drawings must be received, prepaid, at THE BRICKBUILDER office on or before March 13, 1893.

COMPETITION NO. 7.

DESIGN FOR A $2,000 BRICK HOUSE BY *H. in CIRCLE.*
JULIUS HEIMERL, MILWAUKEE.
PLATES 1 AND 2.

NOTES FOR SPECIFICATIONS.

Make excavation for entire basement as per section, also for all piers, etc.

FLOOR.

Matched fencing floor in entire basement on 3 x 4″ sleepers bedded in ashes and cinders.

FOOTING STONES.

Footing stones to be about 2 ft. square by 6″ thick, also footing stones under basement posts.

BRICK WALLS.

Basement brick walls 18″ hollow with 9″ and 4″ walls and 5″ air spaces. First story wall 14″ hollow with 1″ air space, hollow walls well bonded together. All brick good common hard burnt brick; all facing brick to be common yellowish, pink common brick slightly varying in tone, and all laid in good lime mortar.

Diaper pattern on side chimney to consist of common brick, cream colored brick laid with Flemish bond.

The facing brick alluded to above are manufactured in Racine, Wis. Their charm consists in having a peculiar pink color varying in tone enough to break the monotony of a plain wall, and combine excellently in treatment with common cream colored brick. Their price is that of common brick and are in all respects the equal of them as to quality and endurance.

PLASTERING.

Lath and plaster the entire first and second stories two coats, namely a brown coat and hard white finish coat.

Front gable to be plastered two good heavy coats put on wire netting, rendering plaster impervious to water.

Plastering in front gable, also all copings where mortar joints are directly exposed to the weather to be washed down in this manner, namely: The process consists of two coats, one composed of castile soap and water boiling hot, and one of alum and water with a temperature from 60° to 70° Fahr.

The proportions are three fourths of a pound of soap to one gallon of water, and half a pound of alum to four gallons of water, both substances to be perfectly dissolved in water before being used.

Walls should be perfectly clean and dry, and the temperature of the air not above 50° Fahr. when compositions are applied. These washes to be applied alternately until walls or plastering are made impervious to water.

SILLS.

All windows to have sandstone sills harmonizing with color of brick.

Door sills and porch steps to be best limestone.

LUMBER.

All lumber used to be second clear pine, well seasoned. That on interior in first and second stories to be kiln dried. Sill plates to be as per section and scale drawings. Those for interior partitions 2 x 4 or 2 x 6 as studding may happen to be.

BRIDGING.

Joint over 9 feet long to have 1 x 3″ cross bridging.

DIMENSION OF JOIST.

First floor joist 2 x 10 — 16″ on centre. Second floor joist 2 x 10 — 16″ on centre. Second story ceiling joist 2 x 6 — 16″ on centre. Do all necessary double trimming.

STUDDING.

All studdings 2 x 4 corner solid, door and window studs double.

FURRING STRIPS.

Furring strips 1 x 2″ — 16″ on centre on all brick walls in first and second stories.

LINTELS, CENTRES, ETC.

Furnish wood lintels, centres of arches and cradles when required.

GROUNDS.

Furnish ⅞ x 2″ grounds for all casings and bases and wainscots; make all wall plates as per scale drawings.

ROOFS.

Rafters 2 x 4 — 16″ on centres, sheathing to be of common boards with close joints; shingles 4½″ face to the weather best (Star A Star), same on side of building.

SHEATHING.

All sheathing on outside studding to be common boards.

PAPER.

Cover all outside sheathing roofs and side, etc., with one thickness of Star building paper.

SCUTTLE.

Provide scuttle into garret from second story hall, also one on to roof.

FLOORS.

All floor in first and second stories to be made of No. 1 matched and planed fencing except in kitchen.

Kitchen and bath-room are to have a good 2½ x ⅞″ hard white maple floor.

WINDOW FRAMES.

All window frames to be box frames for sliding each as per scale drawings.

SASH.

All sash to be 1⅜ sliding sash except those in one light, which are to swing.

DOOR FRAMES.

Outside door frames 1¾″ moulded same as window frames. Inside door frames 1⅛″ thick.

DOORS.

First story doors 1¾″ thick, second story 1⅜″. O. G. four panelled doors.

Outside door 2¼″ thick moulded panels as per elevations.

BUTTS.

All butts to be black Japanese silver tipped 3½ x 3½″.

WAINSCOTING.

Kitchen wainscoted 3 feet 6″ high; bath-room 5 feet high with 2½ x ⅞ matched and beaded ceiling with base and top mould.

MAIN STAIRS.

Newels, balusters, hand rails, and treads to be of red oak with cove balance of pine: see scale drawings.

BASEMENT STAIRS.

Treads to be of maple 1⅛″ thick, balance of stairs to be of pine.

PANTRIES AND CHINA CLOSET.

Pantry and china closet to have a table shelf 3 feet above floor with drawers and dwarf doors below. Also five shelves above those in china closet enclosed with swinging sash doors.

BRICKBUILDER COMPETITION FOR A $2.000 BRICK HOUSE. DESIGN BY W. T. S. HOYT, BOSTON.

TRIMMINGS.

Knobs and trimmings for outside door to be bronze, for interior doors hemacite. All locks to be good mortise locks.

SASH PULLS.

Sash pulls for all windows.

SLIDING DOOR.

Door to slide into pocket lined with sheathing and hung with Souler's patent hanger.

INSIDE FINISH.

All inside finish second clear, thoroughly dried and seasoned, for painting casings, bases, etc., to be moulded as per scale drawings.

Provide plain seats near fireplace finishing with balance of finish with neatly moulded seat top, also neat corner beads on all plaster corners.

PARTITIONS IN BASEMENT.

Partitions to be of upright matched and planed fencing with 2 x 4″ top, and bottom pieces also put in frames of same stuff for door openings.

COAL BIN.

Make coal bins of 2″ plank with 4 x 4″ corner posts, one section to be removable.

TIN WORK.

All flashing of best 1x tin, also gutter of main roof. Gutters of side wing of No. 26 galvanized iron, also conductors Austin patent corrugated.

PAINTING AND GLAZING.

All exterior woodwork painted three coats as directed.

Interior woodwork two coats and grained in imitation of different woods.

All glass to be single thick American; that in front dining-room window leaded glass.

All shingles to be dipped, and given another coat when on building of Cabot's creosote stain of tints directed.

DESIGN FOR A $2,000 BRICK HOUSE. BY "N'Y PAS."

W. T. S. HOYT, BOSTON.

PLATE 3.

Materials to be of a quality consistent with good workmanship and low cost. Stone wall, 6′ 4″ high, 1′ 6″ thick; mortar, equal parts cement and lime, sand, five parts. Brick walls 12″ thick to water table, 8″ above. Work laid in Flemish bond, bricks selected for color of headers and stretchers. Mortar to be one half part cement, one part lime, five parts sand. Straight arches selected common red brick. Water table, Hydraulic-Press Brick Co. No. 11. Chimney above roof selected brick caps of terra-cotta. Window sills of brick with cement wash. Stone sills for doors only. Brick walls, and plaster all walls two coats, first coat best lime, clean sharp sand, long hair, second coat lime putty. Timber of spruce, joists 2″ x 10″, 2″ x 10″, 2 x 8″, 16″ on centres. Rafters 2″ x 4, 20″ on centres, roof and dormers shingled except rear deck tinned. Sub-floors and attic spruce. Finished floors first and second stories, porch floors and steps, and treads and risers of stairs to be hard pine. All of the finished woodwork, including doors, to be cypress. Kitchen and bath-room wainscoted 3′ 6″ high, chimney breast of selected red brick, hearth of unglazed tile, stock mantle of cypress, cost ten dollars. In general and where possible the finish is to be of selected stock patterns of mouldings, etc., of which it is possible to secure neat and tasty designs at very cheap prices. First and second stories glazed with second quality German, basement sashes glazed with third quality German. All exterior hard wood floors and steps, and all interior woodwork, treated with two coats of boiled linseed oil. Exterior woodwork primed, and except floors, to be painted three coats oil and lead paint, in pure white tints except blinds, which are to be green, shingles are to weather. All hardware to be dark bronze finish, cheap and neat fixtures, such as sink drip cupboards, etc., for kitchen and pantry included in this specification, but no furniture as range, ice chest, sideboard, etc. Conductors to be connected with soil pipe by galvanized iron pipes. This specification does not include grading and exterior accessories.

Note. A careful estimate of this design places its cost, exclusive of plumbing, heating, and grading, within the limit of $2,000.

There are few men better known at the Patent Office than Mr. J. C. Anderson, of Anderson Brick fame. At a recent meeting of the American Association of Inventors and Manufacturers, at Washington, Mr. Anderson was elected Vice-President for 1893.

BOOKS AND PAPERS.

THE December *Clay-Worker* is as interesting and useful as ever. It is certainly a most admirably edited journal, and covers its field so thoroughly, there scarce seems need of any other periodical devoted to the technical side of brickmaking. There is little to interest the architect or builder in this particular number. A half-tone of a brick building in Louisville, which, architecturally is fair, but far below the average of subjects, *The Clay-Worker* has formerly published. The paper, as usual, is well illustrated with half-tones from photographs — portraits of brickmakers, views in yards and factories, etc.

Under the head of "Correspondence" a lot of senseless twaddle against "book larning," probably contributed by a *practical man* — he signs himself "The Village Brickmaker" — has by mistake found its way into type, instead of the basket under the editor's table, where it most certainly belongs.

PATENTS.

A MONTHLY LIST OF RECENT PATENTS GRANTED, WHICH CONCERN THE CLAY-WORKING AND THE BUILDING INDUSTRY, REPORTED SPECIALLY FOR THE "BRICKBUILDER," BY H. M. STERLING, ATTORNEY AT LAW, WASHINGTON, D. C.

BRICKKILN. Charles B. Coxe, Brooklyn, N. Y., inventor and assignor to Edward B. Esterbrook of same place. No. of patent 486,557. Date of issue Nov. 22, 1892.

BRICKKILN. Louis H. Reppell, Kansas City, Mo. No. of patent 487,158. Date of issue Nov. 29, 1892.

BRICKKILN. Joseph Conley and James M. Wolfe, Tarkio, Mo. No. of patent 487,174. Date of issue Nov. 29, 1892.

CONTINUOUS BRICKKILN. Carl F. Kaul, Madison, Neb. No. of patent 486,972. Date of issue Nov. 29, 1892.

BURNING CLAY TO MAKE BALLAST. Henry G. Butler and William Butler, Kenosha, Wis., assignors to the Davy Clay Ballast Co., same place. No. of patent 486,781. Date of issue Nov. 29, 1892.

BRICK DRYER CAR. Nathan Harper, Newark, N. J. No. of patent 486,931. Date of issue Nov. 29, 1892.

BRICK MACHINE. Robert N. Ross and Henry H Kelher, St. Louis, Mo., assignors of one half to Minard S. Bowman same place. No of patent 487,161. Date of issue Nov. 29, 1892.

BRICK MACHINE. Sylvester P. Babcock, Adrian, Mich. No. of patent 488,106. Issued Dec. 13, 1892.

BRICK PRESS. George H. Babcock, Plainfield, N. J. No. of patent 488,049. Issued Dec. 13, 1892.

PAVING BRICK. Leslie C. Turley, Portsmouth, Ohio. No. of patent 487,652. Date of issue Dec. 6, 1892.

BRICK TRUCK. C. H. Horton, Wellington, Ohio. No. of patent 487,835. Date of issue Dec. 13, 1892.

BRICK OR TILE CUTTER. A. Z. Williams, Chicago, Ohio. No. of patent 488,343. Issued Dec. 20, 1892. Patent contains sixteen claims.

CEMENT, ARTIFICIAL PORTLAND. Carl Forell, inventor, Brunswick, Germany. No. of patent 486,706. Date of issue Nov. 22, 1892.

CEMENT, ARTIFICIAL ROMAN. Carl von Forell, inventor, Brunswick, Germany. No. of patent 486,707. Date of issue Nov. 22, 1892.

ROOF OR WALL COVERINGS. Marx P. Schetzel, San Francisco, Cal. No. of patent 487,585. Issued Dec. 6, 1892.

ART OF CROWNING FLOOR JOISTS AND APPARATUS THEREFOR. Joseph Friedrichs, St. Louis, Mo. No. of patent 487,406. Issued Dec. 6, 1892.

FIREPROOF CEILING. George Hayes, New York, N. Y. No. of patent 486,982. Date of issue Nov. 29, 1892.

SHEET METAL ROOF. Louis H. Britton, New Lisbon, Ohio, assignor of one half to Jacob B. Warner, same place. No. of patent 487,172. Issued Nov. 29, 1892.

WALL COVERING. COMPOSITION. La Roy F. Griffin, North Granville, N. Y. No. of patent 486,870. Date of issue Nov. 29, 1892.

OUR INCREASE IN ADVERTISEMENTS.

WHEN THE BRICKBUILDER was started a year ago, it was decided to limit the advertising space, for one year at least, to the three cover pages. One reason for this was a desire to distinguish our paper from the many periodicals devoted to architecture and building, whose only excuse for publication is the advertising revenue they bring their owners. Such papers have a merely nominal circulation in most instances, and by circulation, we mean distribution among actual subscribers or purchasers. They depend upon the cleverness of their advertising solicitors; this gone, utter failure is the result.

It seems to us that the only substantial basis for advertising is a well-established paid circulation. To secure this has been our first effort, and our success well repays us for any loss of revenue from increased advertising space.

We do not consider advertising a necessary evil, borne with in order to allow of a lower subscription price; and we have no patience with those mistaken minded members of the architectural profession who look at the advertising pages of their periodicals as useless, burdensome material, to be torn off without a second thought and consigned to the waste basket. These men are always behind the times, opinionated to the last degree, and lacking that knowledge of improvements in building materials and appliances which they owe to their clients. They do not realize that through the advertising columns of the professional journals there is set forth the record up to date of the inventions and discoveries that are enabling us to build better, more quickly, more cheaply. The manufacturer, introducing a new form of building material, or some patented appliance, seeks to reach the architects through what seems to him the most natural, the most legitimate channels,—the advertising columns of the architectural press.

To the majority of American architects, we believe, these advertisements are of constant practical value, and every paper reaching a large class of professional or trade readers is in duty bound to make its advertising pages as complete as possible in the particular field it covers.

A year ago we had no subscribers and there was some question as to our getting any. We decided to first secure these in quantity sufficient to carry the paper, if need be. We are tolerably well satisfied now, and shall give some attention to the development of our advertising department. This will of course take time, but we feel certain of ultimate success. We urge our readers not to overlook this portion of THE BRICKBUILDER, and we want to impress upon them the fact that every advertiser likes some tangible result from his advertising investments. Therefore it is of prime importance when writing in answer to an advertisement to mention the paper in justice to both advertiser and publisher — to the former, because of his desire to ascertain which mediums pay, and which do not; to the latter, because it insures to his paper credit for its effective work. We submit with this number our first increase in advertising matter, and we trust every subsequent issue will witness a steady growth in this department.

THE ILLUSTRATIONS.

Plates 1 and 2. BRICKBUILDER competition for a $2,000 brick house. Design by Julius Heimerl, Milwaukee, Wis.

Plate 3. Design by W. T. S. Hoyt, Boston, Mass. These are both very suggestive designs for a small brick house of very different types. That the exceeding simplicity of Mr. Hoyt's design is not without its charm is clear from the perspective which we print on page 8. Mr. Heimerl's perspective suggests a somewhat better design than his elevations show. The broader proportions of the gables shown in the sketch are much more agreeable than those shown in the working drawings.

Plates 4 and 5. Residence in Cadogan Square, London, England, for T. A. De La Rue. Ernest George & Peto, architects.

Plate 6. Details of house in Cadogan Square. Ernest George & Peto, architects.

Plates 7 and 8. Details of business premises on Mount Street, London, England. Ernest George & Peto, architects.

We continue in this number further illustrations of the very interesting brick and terra-cotta work of Ernest George & Peto, which is characteristic of the best work in this kind now being done in England. On page 3 we print a small cut of the chimneys of the Mount Street buildings.